

ESCWA CELEBRATES 2016 WORLD DAY TO COMBAT DESERTIFICATION

Land Degradation Neutrality in the Arab Region – Preparing for SDG Implementation

Factsheet

LAND DEGRADATION IN THE ARAB REGION

The Arab region is highly susceptible to land degradation which is exacerbated by the growing scarcity of water resources and high levels of aridity. For example, long coastal stretches are threatened due to the combined effect of falling water tables and rising sea levels. Climate change is increasing the intensity and frequency of extreme weather events and the region is more likely to be affected by rising temperatures than others.

Land degradation refers to any reduction or loss in the biological or economic productive capacity of the land resource base. The main driving forces for land degradation and desertification are associated with climate variability and human influences. They often occur as a combination of extended droughts, increased temperature, soil erosion and human activities such as unsustainable agricultural practices, overgrazing, and deforestation.¹ Land degradation harms both ecosystems and communities by reducing their capacity to ensure food and water security, generate livable incomes and cope with the impacts of climate change.² The most visible impact of land degradation is reduced land productivity and destruction of properties. Impacts also include increased vulnerability to droughts and water scarcity, extreme climatic events such as flash floods and heat waves, greater rate of desertification and reduced resilience.³ Desertification refers to land degradation in arid, semi-arid and dry sub-humid areas.

According to predictions, the region will experience growing variability in precipitation and extreme weather events such as droughts, which may have detrimental consequences for agriculture-based communities.⁴ The Arab region is extremely dry with 92% of its area being hyperarid⁵ while 73 percent of its arable land is affected by land degradation.⁶

In the past 25 years, the increased cultivation of marginal lands and poor management of rangelands have contributed to the loss of 2 million hectares of agricultural land in North Africa through soil erosion. About 35% of the Middle East experiences high to extreme levels of soil erosion as a result of over exploitation. Over 130 million hectares of rangeland have degenerated. High risk areas include the mountains in Lebanon and Yemen, coastal plains susceptible to seawater intrusion such as in Gaza or the Nile Delta, desert

¹ Faour, G. (2014). Detection and mapping of long-term land degradation and desertification in the Arab Region using MODESERT, National Center for Remote Sensing, National Council for Scientific Research, Beirut, Lebanon, Lebanese Science Journal, Vol. 15, No. 2, 2014

² UNCCD (2015). Towards a Land Degradation Neutral World A Sustainable Development Priority, <http://www.unccd.int/en/programmes/RioConventions/RioPlus20/Pages/Land-DegradationNeutralWorld.aspx>

³ ElRaey (2010). Impact of sea level rise on the Arab region. University of Alexandria and Regional Center for Disaster Risk Reduction, Cairo (http://www.arabclimateinitiative.org/Countries/egypt/ElRaey_Impact_of_Sea_Level_Rise_on_the_Arab_Region.pdf)

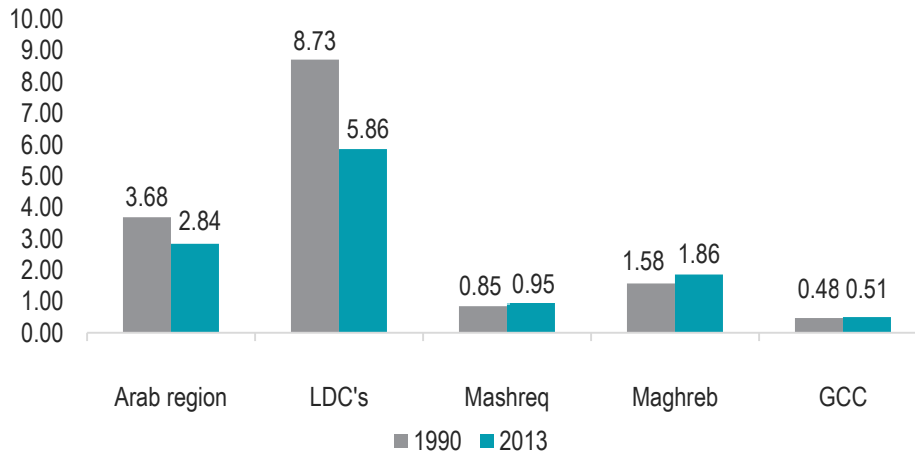
⁴ ESCWA (2015). Arab Sustainable Development Report, First Edition, United Nations, New York, <https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/arab-sustainable-development-report-1st.pdf>

⁵ ESCWA; 2007: Land Degradation Assessment and Prevention, ESCWA, Beirut, Lebanon and AFED, 2008: Arab Environment: Future Challenges, Arab Forum for Environment and Development (AFED)

⁶ ESCWA (2007). Compendium of environments statistics in the ESCWA region. United Nations, New York, based on GLADIS

encroachment in Sudan and the Arabian Peninsula and salinization in the Jordan Valley to name a few.^{7 8}

Average vegetation coverage (percentage of land area) in the Arab region



Source: ESCWA (2015). Arab Sustainable Development Report, First Edition, 2015. United Nations, New York

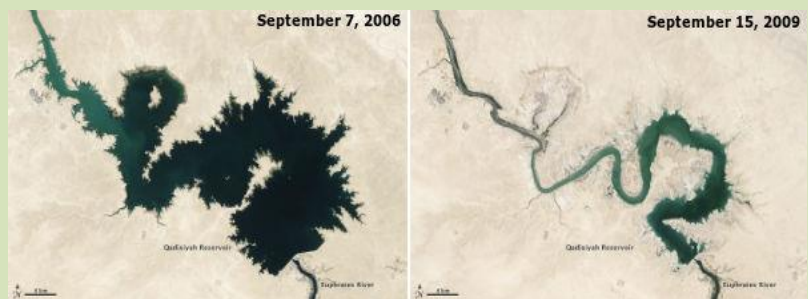
Vegetation cover plays an important role in soil erosion control. The average vegetation cover as a percentage of land area in the Arab region declined from 3.7 per cent in 1990 to 2.8 percent in 2013. This 23 per cent reduction was due in large part to a 33 per cent decrease in the least developed countries⁹ while other sub-regions witnessed relatively small increases (less than 5% of the region has witnessed positive changes in vegetation cover).¹⁰

With the advent of climate change, sea level rise is fast becoming a major concern in the Arab region. Many coastal areas are at great risk if not already affected by salt-water intrusion leading to soil salinization, degradation of coastal lands and aquifers and loss of biodiversity. Sea storm surges and inundations are expected to lead to the destruction of coastal economic infrastructures as well.

Land degradation in the Euphrates and Tigris River Basin

In Syria, salinity is especially critical in the Euphrates basin, where more than 40% of total irrigated land is affected. 125,000 ha suffer from high soil salinity, resulting in a 37% decline in yields of cotton and wheat, the main irrigated crops. The total annual loss in agricultural productivity is estimated at 80 million USD or 0,45% of GDP.¹¹

In the wetlands of Mesopotamia, the marshland shrunk from 9,000 square kilometers in the 1970s, to a few hundred square kilometers in the early 2000 due to the building



Qadisiyah River Basin, September 2006 and September 2009

⁷ ESCWA (2007). Land degradation assessment and prevention: Selected case studies from the ESCWA region. United Nations, New York.

⁸ Elgendy, K. (2010). The impact of sea level rise on the Arab region (<http://www.carboun.com/climate-change/the-impact-of-sea-level-rise-on-the-arab-world-2/>).

⁹ Comoros, Djibouti, Mauritania, Somalia, Sudan, Yemen

¹⁰ ESCWA (2015). Arab Sustainable Development Report, First Edition, 2015. United Nations, New York

¹¹ Hussein, M.A. (2007). Costs of environmental degradation, An analysis in the Middle East and North Africa region, Dhofar University, Salalah, Dhofar, Oman, <http://earthmind.org/files/coed/03-COED-Middle-East-North-Africa.pdf>

of dams and agricultural irrigation structures across the Tigris and Euphrates Rivers since the 1970s.¹²

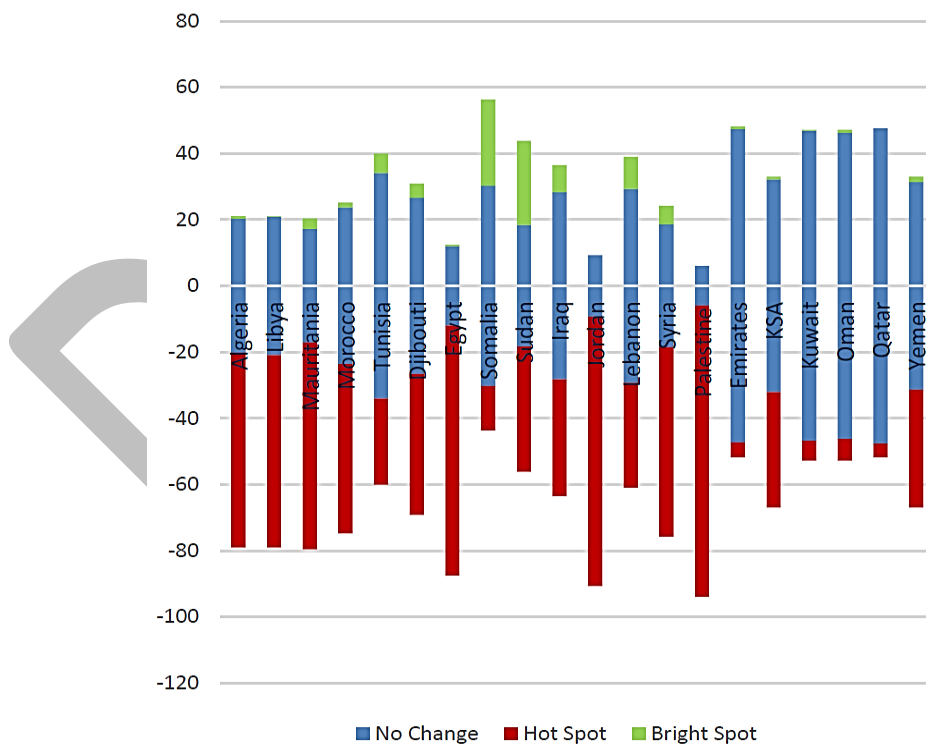
Approximately 145 cubic kilometers of fresh water were lost from 2003 to 2009. This was induced by different factors:

- a) water abstraction for agriculture for large scale development projects in Turkey, which installed a total of 22 dams¹³;
- b) the drought occurring over the last few years that have led to increased groundwater abstraction and estimated to account for up to 60% of the loss, and
- c) one fifth of the water losses is attributed to the shrinking of the snowpack and soil drying up.¹⁴

Some of the dramatic end-result can be observed through the Landsat 5 satellite images of the Qadisiyah Reservoir above.

Faour (2014) delineated land degradation and desertification in the Arab Region through remote sensing. The below graph by Faour analyses long term changes in land degradation and desertification vulnerability derived from GIMMS Normalized Difference Vegetation Index (NDVI) data over the time period between 1982 and 2006. Results indicate that more than 40% of the total Arab region are sensitive to land degradation and desertification.¹⁵

Hot spots, bright spots and no change vegetation areas derived from long time GIMMS data (1982-2006)



Source: Faour, G. (2014) Detection and mapping of long-term land degradation and desertification in the Arab Region using MODESERT, Lebanese Science Journal, Vol. 15, No. 2, 2014

¹² Faour, G. (2014). Detection and mapping of long-term land degradation and desertification in the Arab Region using MODESERT, National Center for Remote Sensing, National Council for Scientific Research, Beirut, Lebanon, Lebanese Science Journal, Vol. 15, No. 2, 2014

¹³ FAO (2012). Report of the Expert Meeting on the Review of Fisheries and aquaculture activities in the Euphrates-Tigris Basin, <http://www.fao.org/3/a-i4217e.pdf>

¹⁴ NASA (2013). http://www.nasa.gov/mission_pages/Grace/news/grace20130212.html

¹⁵ Faour, G. (2014) Detection and mapping of long-term land degradation and desertification in the Arab Region using MODESERT, National Center for Remote Sensing, National Council for Scientific Research, Beirut, Lebanon, Lebanese Science Journal, Vol. 15, No. 2, 2014

Land degradation causes negative impacts on the economy due to effects of soil salinity, water erosion and rangeland degradation on land productivity amongst others. Attempts have been made to quantify the cost of environmental degradation caused by desertification and land degradation. Although precise data are not available for each source of land degradation, Hussein estimated orders of magnitude in the below table to give a perspective on the economic impact of degradation. Studying the extent of land degradation itself - as well as the cost associated with it - is difficult and figures are often contested. Estimated data needs verification through specific country studies and examples on the ground.

Annual damage costs from land degradation (percentage share in GDP in 2000)

	Algeria	Egypt	Lebanon	Morocco	Syria	Tunisia
Average annual costs of land degradation (percentage of GDP)	1.2	1.2	0.6	0.4	1.0	0.5

Source: Hussein, M.A. (2007) Costs of environmental degradation, An analysis in the Middle East and North Africa region, Dhofar University, Salalah, Dhofar, Oman

Repercussions of desertification for the Arab region are poverty, food insecurity, forced displacement, migration and disruption of social and political institutions. Continuing land degradation has severe environmental, economic and social implications that could negatively affect the socio-economic and political stability of the region.

Estimating the cost of land degradation in Morocco

FAO conducted a case study in Morocco (based on data from 2006) to estimate the cost of land degradation. 93% of land in Morocco is arid and 7% is sub-humid and humid. An estimated 19% of Morocco's land (excluding the Saharan provinces), is subject to severe and very severe degradation, as soils are fragile and suffer from water and wind erosion because of their low (less than 2%) organic-matter content.

Arable land and permanent crops represent 9.3 million hectares. Irrigated agriculture covers about 1.4 million hectares. Although irrigated agriculture is only a small proportion of the total cultivated area (15%), it plays a disproportionately important role in agricultural production because of its high productivity and lower vulnerability to drought. Agricultural activities are responsible for 100% of the land that is severely and very severely degraded in the country though there is no indication of non-recoverable loss in the soil's biological function. The estimated cost of degraded cropland ranges from US\$78 million to US\$157 million—averaging to US\$117.5 million.

Morocco's 65 million hectares of rangelands are the primary source of animal food, providing 30 percent of the overall requirements. The average damage costs of loss of forage production due to land degradation is estimated at US\$16.7 million.

The degradation of cropland and rangeland in Morocco exacts an estimated annual cost of US\$91 million to US\$178 million, or an average of US\$134 million—0.4 percent of GDP in 2000. These results do not capture several problems, such as the impact of salinity on irrigated soil. Thus, the above estimate most likely underestimates the total impact of land degradation. If one considers a total population of 30.4 million in Morocco, the damage corresponds to about US\$4 per capita in 2000—a conservative figure relative to other countries in the region.

Source: Sarraf, M., Jorio, A. (2010) Land Degradation: The Case of Morocco, World Bank

LAND DEGRADATION NEUTRALITY IN THE SDGS

The United Nations Convention to Combat Desertification (UNCCD) was established in 1994 with the aim to halt land degradation. So far, however, actions taken could not keep up with the high rate of land degradation. The twelfth session of the Conference of the Parties to the UNCCD (COP12) defined Land Degradation Neutrality (LDN) as

“a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems”.

In practice, this means securing enough healthy and productive resources by avoiding degradation whenever possible, better managing the land, and restoring the land that has already degraded. At its core are better land management practices and better land use planning.¹¹

The UN Conference on Sustainable Development (Rio+20) in 2012 agreed upon the need for achieving land degradation neutrality and the subsequent negotiation process for the Sustainable Development Goals (SDGs) emphasized its importance. LDN is part of the SDGs¹⁷ as target 15.3 under the larger Goal 15, which promotes the protection, restoration and promotion of terrestrial ecosystems.

Sustainable Development Goal 15 and targets



Source: Sustainable Development Knowledge Platform (2016). <https://sustainabledevelopment.un.org/sdgs>

The means of implementation relevant to land degradation are:

- 15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems
- 15.b Mobilize significant resources to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation
- 15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

Target 15.3 has become a strong vehicle to drive UNCCD implementation, while at the same time contributing to other SDGs, including those relating to climate change mitigation and adaptation, biodiversity conservation, ecosystem restoration, food and water security, disaster risk reduction, and poverty reduction. While all SDGs strongly relate to each other, the following SDGs targets have a direct link to sustainable management of land resources.

¹⁶ UNCCD (2016) Land Degradation Neutrality, The Target Setting Programme, The Global Mechanism of the UNCCD

¹⁷ UNCCD (2014). Land degradation neutrality, resilience at local, national and regional levels, http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/Land_Degrad_Neutrality_E_Web.pdf

Targets relating to the sustainable management of land resources in some SDGs

	<p>2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment</p> <p>2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality</p>
	<p>6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity</p> <p>6.6 By 2030 protect and restore water related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes</p>
	<p>8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead</p>
	<p>11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries</p> <p>11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage</p>
	<p>12.2 By 2030, achieve the sustainable management and efficient use of natural resources</p>
	<p>13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries</p> <p>13.2 Integrate climate change measures into national policies, strategies and planning</p>

Source: Sustainable Development Knowledge Platform (2016). <https://sustainabledevelopment.un.org/sdgs>

UNCCD recommends applying several policies and methods in order to work towards the achievement of land Degradation Neutrality. At its core are better land management practices and better land use planning. These include for instance avoiding unsustainable practices such as monocultures, over-abstracting limited water resources and overgrazing. Solutions to combat desertification and land degradation include policies promoting sustainable land management and ecosystem restoration through sustainable practices including agroforestry, no till agriculture and the use of cover crops, extensive and sustainable pastoralism and integrated landscape planning.¹⁸ Each government is responsible for setting its own national targets guided by this global level of ambition while taking into account national circumstances.¹⁹

INSTITUTIONAL SETTING TO IMPLEMENT LAND DEGRADATION NEUTRALITY

All ESCWA Member Countries, except Palestine, have ratified the UNCCD convention, and some are revising earlier plans or preparing new national strategies, action plans, and integrated financing strategies to combat desertification. The action plans involve long-term integrated strategies for improved productivity of land coupled with the rehabilitation, conservation and sustainable management of land and water resources, at national as well as community level.

Moreover, the Arab countries have established dedicated institutions, such as the Arab Centre for the Study of Arid Zones and Dry Lands (ASCAD) through the League of Arab States, or the International Center for Biosaline Agriculture (ICBA), which aim to address the conservation and development of natural resources in arid lands. The Council of Arab Ministers Responsible for the Environment (CAMRE) prioritized the issue of drylands and desertification since its session in Libya in December 2003, with the adoption of the Arab

¹⁸ UNCCD (2015). Towards a Land Degradation Neutral World A Sustainable Development Priority, <http://www.unccd.int/en/programmes/RioConventions/RioPlus20/Pages/Land-DegradationNeutralWorld.aspx>

¹⁹ UNCCD (2014). Land degradation neutrality, resilience at local, national and regional levels, http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/Land_Degrad_Neutrality_E_Web.pdf

Environmental Work Programme, amongst other pressing environmental issues.²⁰ Unfortunately, so far the efforts and resources devoted to combating land degradation and desertification remain below the requirements to tackle the growing problem.

More recently, UNCCD developed the Arab Sub-Regional Land Degradation Neutrality initiative together with UNEP-ROWA and IUCN-ROWA under the umbrella of the League of Arab States Climate Risk Nexus Initiative. It addresses food security, water scarcity and social vulnerability to build resilience in the Arab region. The draft concept of the initiative was developed during an event organized in cooperation with the Arab Water Council in early 2016 in Cairo.²¹

Internationally, several initiatives address the issue of land degradation. The UNCCD COP 11 (2013) established an Intergovernmental Working Group (IWG) in charge of defining targets, developing concrete options for implementation and monitoring, as well as strategies for resource mobilization. The Republic of Korea and UNCCD also established the LDN Project, which aims to pilot land degradation neutrality in 14 countries, with technical assistance and guidance on mainstreaming it in public and private sector activities. Out of the pilot countries, only Algeria is in the Arab Region. It will be important to create a regional network and platform where all data on land degradation and desertification will be published and accessible in order to enable science-based policy-making in the Arab Region.

In terms of implementation and financing, UNCCD created the LDN Fund, an investment platform established as a public-private partnership to support the transition to LDN. It will focus on direct investments in large-scale land rehabilitation as well as targeted allocations for small and medium-scale projects that produce local benefits.

Knowledge exchange platforms, capacity building tools, facilitation for partnerships, and pilot projects have also been created, amongst others the Soil Leadership Academy, Greening Drylands Partnership (GDP), Land for Life Award, the Economics of Land Degradation (ELD) Initiative, Bonn Challenge, the New York Declaration on Forests as well as private sector activities such as Initiative 20x20 and Net Positive Impact.

LAND DEGRADATION NEUTRALITY INDICATORS

Yet many countries currently lack the necessary methods, data and expertise to set baselines and monitor and report on progress against land degradation. In March 2016, the UN Statistical Commission approved a draft global indicator framework intended for the follow-up and review of progress towards the SDGs at the global level.²² The indicator proposed for SDG target 15.3 is: "Proportion of land that is degraded over total land area". The three sub-indicators are:

- land cover and land cover change
- land productivity
- carbon stocks above and below ground

UNCCD provides support to countries in setting their national voluntary targets through the LDN Target Setting Programme. Operational since early 2016, the Programme enables countries to define national baselines and measures to achieve LDN by 2030.

The national voluntary targets should be measurable, verifiable and time-bound. In order to set a baseline, countries identify priority areas for LDN implementation, gather and process national LDN data and seek default estimates from global data sources. The baseline will describe the initial status of land degradation, identify particularly vulnerable areas and help derive indicators. Reporting will be based primarily on official national data, which will be complemented by global available data sets and Earth observations such as FAO's LADA2 and remote sensing deliveries. This data can be used to fill data gaps, can be ground-truthed,

²⁰ Brauch, H.G., Oswald Spring U., Grin, J. et al. (2009) Facing Global Environmental Change, Hexagon series on Human and Environmental Security and Peace

²¹ IUCN (2016). The Arab Land Degradation Initiative, <http://www.iucn.org/content/arab-land-degradation-initiative>

²² UNCCD (2016) Land Degradation Neutrality, The Target Setting Programme, The Global Mechanism of the UNCCD

and validated during reporting cycles.²³ In addition, indicators at national level relating to relevant biophysical, governance and socio-economic conditions can be added.

The LDN Target Setting Programme also helps countries to identify priority areas for viable LDN investments, including scalable success stories and large-scale transformative LDN projects.

The process of land degradation is complex and has diverse implications, which need to be addressed from different angles in a coordinated manner and by involving all concerned actors.²⁴ The LDN Target Setting Programme facilitates multi-stakeholder consultations under the leadership of the national governments, consultation workshops to discuss and validate the LDN baseline and measures defined.

The data collected will permit an assessment of the causes of land degradation and allow identifying the right policies and management interventions. This approach would link the achievement of SDG target 15.3 to that of several other targets, including 2.4 (sustainable agriculture) or 15.2 (sustainable forest management) by providing, for example, useful information for the evaluation of sustainable land (forest) management systems, their spatial extent and distribution as well as for integrated and sustainable land use planning at multiple scales.²⁵

Despite the fact that globally and in the Arab Region there is absence of adequate data, it is possible and necessary to take action. The monitoring and assessment of the state of land degradation, the needed indicators and responses to different uses need to be developed in parallel.²⁶

The problem and underlying causes of land degradation need to be addressed through an integrated planning approach when developing strategies and policies. The 2030 Agenda highlights the problem of land degradation and desertification and offers a unique opportunity for all involved and affected actors to work towards achieving Land Degradation Neutrality.

²³ UNCCD (2015). Towards a Land Degradation Neutral World A Sustainable Development Priority, <http://www.unccd.int/en/programmes/RioConventions/RioPlus20/Pages/Land-DegradationNeutralWorld.aspx>

²⁵ EEA, IASS, (2015) Proposal for land and soil indicators to monitor the achievement of the Sustainable Development Goals (SDGs), http://www.iass-potsdam.de/sites/default/files/files/land_and_soil_indicators_proposal.pdf

²⁶ Thomas Caspari, Godert van Lynden, Zhanguo Bai (2013). Land Degradation Neutrality: An Evaluation of Methods, ISRIC-World Soil Information, Wageningen, Netherlands, On behalf of the Federal Environment Agency (Germany), https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/texte_62_2015_land_degradation_neutrality_0.pdf